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ABSTRACT

Criteria for the evaluation of quality technical educational programs must be identified if follow-up studies are to be effective. Current research shows that problems in the development of such criteria include the tendency to evaluate programs on the basis of organizational structure rather than on the quality of the instructional program itself; the substitution of process for product; the notion that evaluations of quality are elitist and racist; and the desire to revert to educational values of the past. Studies revealing the scarcity of substantive evaluations and the inadequacy of the factors that are currently studied for assessing the effectiveness of vocational education also underscore the need for better evaluation procedures. Evaluation effectiveness could be heightened by the use of a matrix on which are identified: (1) populations which have expectations of certain programs; (2) the immediate goals (i.e., those that apply during enrollment) and the ultimate goals (i.e., post-graduation expectations) for the populations; (3) the current process of goal attainment; and (4) the criteria for judging the success of that process in actually meeting desired goals. The evaluation must then be professionally assessed and educational auditing procedures should be considered. The report included an illustration of the matrix and a description of its use, as well as a bibliography. (JP)

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How to Recognize a Quality Technical Education Program

by

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Introduction

The problem "How to Recognize a Quality Technical Education Program?" is another one of those seemingly insurmountable problems that exists today. But you should as a result of this presentation become aware of a procedure that will enable you, with some homework, to clearly state how to recognize a quality technical education program, at least, that program/s for which you are responsible. However, before examining the means to solve this problem some background on the topic seems appropriate.

Jeanne Gammel, et al., (1976) define the problem clearly and concisely in their follow-up study report of technology graduates from New York City Community College:

> Now, as community colleges approach the beginnings of the 80's, they are experiencing the first effects of the "steady state." Concern is expressed less with the quantity and more with the quality of

> educational programs. Quality education, with its myriad of definitions, does not depend primarily on the number of students or on the diversity of programs, or on new devices for decision making although these factors certainly contribute. The quality of education depends primarily on the quality of the instructional program. If the college of the future is to realize even a modicum of its potential, faculty and administrators will have to begin to pay as much attention to the outputs of instructional programs at to the number of students, buildings, and organizational structures. (p. iii)

Walter Brooking in the most recent Technical Education News (January-February 1979) pointed to the fact that "The emphasis now is on the quality and effectiveness of the voc-tech programs, with particular interest being paid to (1) the use of local advisory committees . . .; (2) equal and nondiscriminatory access to programs; (3) programs for the handicapped; and (4) follow-up of the students to determine their success . . ." (p. 20).

Norman Harris and John F. Grede examine quality and excellence in career education as a theme in their excellent book Career Education in College. Two of their observations should be noted, "There is a regrettable tendency in America today to view process as product" (p. 251) and "But unfortunately, the ideas of quality and excellence

have somehow been equated with elitism in the minds of many, and, even more regrettably, have been construed as code words for racism by some" (p. 371).

Jeffrey Lukenbill and Robert McCabe at Miami Dade Community College discuss the quality issue in General Education in a Changing Society. This report is the result of a three year study of general education which has resulted in a new program being implemented and tested. They explain:

> A major concern of both the American public and educators is the quality of education provided. What constitutes "quality" education is, of course, debatable, but the present discussion often suggests a need to return to the values and practices of education of the past as the model for "quality." (1978, p. 55)

They do discuss quality education for general education from the educator and parent point of view but do not pursue "quality" when discussing occupational and technical education.

In summation of their discussion they quote K. Patricia Cross' caution, "Standards we surely need, but the problem lies not so much in the preservation of the old as in the creation of standards more in tune with our emerging identity" (p. 56).

The National Institute of Education (1977) in its Plan for the Study of Vocational Education dwells on means of assessing program quality and effectiveness. The Plan has this statement:

> We take this to be called for by the statement in Title V, Part B, Section 523 (b) (1) of the Educational Amendments of 1976 that the study "shall include . . . (c) an analysis of the means of assessing program quality and effectiveness . . ." These inquiries will center on the means used for assessing the instructional, but not the administrative, dimensions of vocational education programs. They will deal with the criteria involved in reaching judgments about program quality and effectiveness and, consequently, with how these ideas are made operational in vocational education. They will, moreover, seek to provide information on the uses and effects of the several criteria for assessing program quality and effectiveness specified in the 1976 Act. (p. 21)

The Plan by NIE calls for a review of literature and states to determine how program quality and effectiveness are assessed at Federal, state and local levels, a national conference on evaluation, indepth studies of ten states and a survey to delineate evaluation patterns nationally.

A tentative finding of the NIE Vocational Education Study, cosponsored by the National Advisory Council on

Vocational Education, was given in 1978 by the project director Henry David. He indicated "There is not a large number of studies which have been conducted with much vigor" (Manpower and Vocational Education Weekly, p. 2). His remarks concern studies conducted since 1968 on effects of vocational education on participants. Perhaps this is true. However the technical educator can find some studies of substance by such persons as Richard Noeth and Gary Hanson, Jeanne Gammel, Keith Stoehr, J. K. Shimada, Yaman Tari, Angelo Gilli, George Storm, Edward Mann, and William G. William and Fred Snyder. The 1977 report on the Placement of Engineering and Technology Graduates is also available from the Engineers Joint Council.

The U.S. Congressional Budget Office examined the Federal role in vocational education. Their summation of the purpose of vocational education and its success is:

> The principal goal of vocational education is to improve the employment skills and resulting job opportunities of participating students. Unfortunately, there are a number of difficulties in examining these effects. Vocational educators usually measure program success by growth in enrollments, growth in completions, and the percentage of students looking for work who find jobs in their general area of training. While these factors are surely important, each is incomplete as a measure of success. Growth

in enrollments and completions could result from a number of pressures unrelated to employment goals, including ease of coursework, the tracking system in some secondary schools, the perception that post-secondary education is losing its value in the labor market, pressure from counselors and teachers, etc. The number of students looking for work who find jobs related to their training ignores the considerable number of students who do not look for work because there are no jobs or because they feel the need to continue their education, or both. (p. 26)

More appropriate measures of program success would include the differences between vocational and non-vocational students in wage rates, the average time before job placement, and average hours and earnings during the first year or two. The fact that such data are not systematically collected is another difficulty in evaluating vocational education. Few of the studies using some or all of these measures have noted any differences in success in the job market between vocational education and general or academic students looking for work, and even those differences appear to vanish within five years. Perhaps significantly, a study by the Research Triangle Institute found that the available manpower data are rarely used by vocational administrators and counselors

> to alter curricula to meet changing labor market demands or to improve job opportunities. In short, it is difficult to characterize vocational education and its federal support as either a success or failure. (p. 26)

It is also stated in that same report by the CBO that:

> There is less evidence of success in vocational education programs, which are about 12 percent funded by the federal government. Vocational education has experienced a growth both in enrollments and completions in recent years, but few of the studies examining the relative success of vocational graduates in the labor market, using data from National Longitudinal Surveys and other sources, have noted any significant differences in their success rate compared with that of general or academic graduates. Even those differences noted appear to vanish within five years. (Congressional Budget Office, undated, p. xv)

It was reported in Federal Research Report (December 22, 1978) that a request for proposal to study the "Effects of Vocational Education" is due January 31, 1979. The study should be designed to review all longitudinal and other studies at the national, state and institutional level that provide some measure of vocational program effects. Thus a research priority at the Federal level still exists.

From this introductory review of the problem of quality several factors emerge. That is the measure of quality is shifting from quantity of people and things to quality of people, there are a myriad of debatable definitions of quality, process and product are a confusing element as well as the issue of quality as racist, tentative research findings by NIE and the U.S. Congressional Budget Office find vocational education follow up studies inadequate and perhaps vocational education itself ineffective and finally at the Federal level the study of the effectiveness of vocational education is a research priority. In addition to the above the Public Law 94-482 Sec. 112 (a) (A) requires "each state shall, during the five-year period of the State plan, evaluate the effectiveness of each program within the State being assisted with funds available under this Act; and the results of these evaluations shall be used to revise the State's programs, . . ." (90 STAT., p. 2187).

It can be concluded that unless the criteria for quality for recognizing an education program are determined, ineffective follow-up studies will result. These inaccurate data may then be used to change programs incorrectly.

Criteria for Quality

Persons who have tried to determine the criteria for recognizing a quality technical education program have probably been confronted with the problems of:

1. confusing an evaluation process with definitions of criteria
2. confusing the instructional process with educational product
3. allowing present program conditions to bias ones thinking, i.e., there is no way this criterion can be achieved so omit it or it may be that a person is so mentally conditioned that such criteria are unconsciously omitted
4. identifying criteria that are political or self serving
5. identifying only those criteria necessary for legislative or legal compliance
6. not realizing that criteria come from many different social groups, institutions, associations, industries, etc., and
7. fearing that measurement of the correct criteria may result in less than favorable ratings

It seems from a review of the literature that those who have tried to identify quality education tend to eventually concentrate on process more than product, even though there is constant stress on product as being the key

to program quality. It also appears, with few exceptions, that data collected in follow-up studies are not interpreted concerning program quality. Concerning the former observation an example is appropriate. Note that only two of the statements (2 and 3) might be considered product statements. The New Jersey Division of Vocational Education in its 1979 Annual Report to the State Board of Education asked a question than answered it:

> What characteristics insure that a vocational education program will be of high quality?
>
> Vocational education is of "high quality" when:
>
> *the programs are responsive to the needs of all types of students (regular students; handicapped; educationally disadvantaged; college bound; gifted and talented; all races and ethnic groups).
>
> *students completing the program are readily placed in employment with a high potential for improved career mobility.
>
> *students and parents are highly enthused about the program.
>
> *vocational education teachers are conscientious, highly motivated, up-to-date in their vocational knowledge and skills, and approachable by other persons.
>
> *school administrators are supportive, flexible, open to necessary program changes, and committed

to teacher development.

*vocational programs are implemented or withdrawn, responsive to short and long range employment needs.

*appropriate vocational student organizations are active, integrated with the vocational curriculum, and encourage the development of student leaders.

*effective linkages have been developed which relate local trade advisory committees, employers and the community to the classroom activity. (1979, pp. 48-49)

Means for Identifying Criteria

As mentioned in the introduction, a means for solving the problem of identifying criteria to recognize a quality technical education program is to be presented. This "means" is a matrix or chart in which one can layout the factors associated with program quality.

To identify the uses of this matrix (Figure 1) as well as to determine if there is a need for such a tool, twelve persons were interviewed ranging from state department personnel, to technical instructors plus testing it in two graduate classes, i.e., Development and Structure of Post-Secondary Occupational Education and Principles and Practices of Vocational and Technical Education. Every

person judged that the matrix had some value--for their own use. Some of these uses are:

1. It forces one to determine who has expectations of a program. In particular, it might cause one to determine the power structure populations who have expectations of a program.
2. It can provide the means to define exactly what any given population expects of a program.
3. It allows the educator to describe the process that exists, if any, which is presently being used to accomplish each expectation.
4. It allows the educator the opportunity to specify the exact measures of quality for each process by which a value of success or otherwise can be determined.
5. Common and unique expectations for the different populations can be determined by looking at the vertical axis.
6. Immediate and ultimate expectations can be identified. Immediate expectations are those in which the student is in the program. Ultimate expectations are those concerning the student after leaving the program.
7. Confusion between process and product can be eliminated.

LEVELS OF RESPONSIBILITY	IMMEDIATE EXPECTATIONS (While Student is in Program)			ULTIMATE EXPECTATIONS (After Student Leaves Program)		
Society						
Student						
Parent						
Employer Large Small						
Employee Representative						
Accrediting Association						
Licensing Agency						
Alumni						
Professional Association						
Courts Federal State						
Federal Gov't.						
State Gov't.						
Local Gov't.						
Faculty Academic Technical						
Institutional Administration						
Process						
Criteria						

FIGURE 1 - Matrix To Identify Criteria for Recognizing a Quality Technical Education Program A

Referring to Figure 1, on the left side of the matrix are populations that may have expectations of a program.* Also on the left are the terms "Process" and "Criteria." For each immediate and ultimate expectation, the process can be described, e.g., what the student will experience while in the program. Corresponding criteria or a criterion can be stated for each process.

To use this matrix you:

1. Identify those populations which have expectations of a program. You might prioritize those populations to which a program is more responsible, e.g., power structure, industry, etc.
2. Interview, review the literature, etc., to determine the expectations of each of the populations.
3. Categorize the expectations to immediate or ultimate. That is, immediate expectations are those which apply while the student is in the program. Ultimate expectations are those after the student has left the program.
4. Describe the process for each expectation which is presently existing, if any.

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*Levels of responsibility mean that the institutional/program administrators are responsible for providing the experience necessary to fulfill the expectations of the different populations.

LEVELS OF RESPONSIBILITY	IMMEDIATE EXPECTATIONS				
STUDENT	What is the reputation of the school/program?	Can I afford the cost?	Can I get in the program?	Can I finish the program?	Can I get credit for prior work experience or education?
PROCESS	Student Recruitment materials are based on surveys of alumni progress and employee satisfaction.	Exact costs for all expenditures are given to each student in the program description. Fellowships, grants, loans are located for the student.	Exact entrance requirements are given to potential students in the program description. Testing of each student is mandatory.	Exit standards are in the program description. Guidance and counseling are mandatory based on test results when applying	Work experience and competency examinations for credit are explained in the program description.
CRITERIA	No complaints, law suits, drop-outs, or increasing frequency of transfers due to improper program discription.	No qualified student is unable to enter the program due to funding problems. No student drop-outs due to insufficient information about costs.	No complaints, law suits, drop-outs, or transfers due to students entering school and being rejected for the program.	All students who enter the program complete the program.	Credit given is approved by appropriate authorities. Students do not fail advanced courses. Students succeed when they enter the job market.

FIGURE 2 - STUDENT IMMEDIATE EXPECTATIONS OF PROGRAM

B

IMMEDIATE EXPECTATIONS

What social activities are there?	What if I need help in my studies?	Can I attend school if I have to work full time or part time?	Can I transfer credits from this program to another institution?	For what kinds of jobs will this prepare me?	Have students been treated fairly? Have their rights been violated?
A social program is available and publicized for all students to participate	Instructors have regularly scheduled conference times. Tutoring sessions are regularly scheduled.	Courses, services and social activities are scheduled for part time students.	Articulation agreements and full faith policy exists for transfer students.	The curriculum is based on a job cluster task analysis to determine common and unique tasks. Job clusters are described in program description.	Students/Alumni/ employers are used in program introduction to potential students. Laws, regulations and court decisions are obeyed.
No complaints concerning social activities.	No complaints or gailures due to needed conferences or tutoring.	All students can complete a program in three years.	No credit is lost by transfer students from one program to a similar one in another institution.	No Alumni complaints concerning types of jobs this program enabled them to pursue	No complaints, law suits, drop-outs, or transfers due to lack of fairness or violation of privacy rights.

FIGURE 2 (Continued)

C

ULTIMATE EXPECTATIONS

What if the job I want is eliminated by technological advancement?	What will be the job market when I finish my education?	How much money will I make in this job?	Will I be able to get ahead in this job?	Are jobs close by? I don't want to move.	Will I be happy in this job?
The program is based on job cluster task analysis.	Job demand data on national and state level is collected annually and given to students. Program output is adjusted accordingly.	Wage data is collected annually and given in the program description.	Career ladder curriculum is available based on needs by alumni and demands by employers.	Local job demand data is collected annually and given to students.	Initial information given to students when they first consider the program includes factors about the job conditions, work availability, geographical location, job stress, etc.
Alumni are able to shift from one job to another within the same cluster.	Jobs are available when students graduate.	Satisfaction/ dissatisfaction feedback from alumni. Monetary return will justify cost of program.	Alumni express satisfaction with career advancement. Alumni are offered courses/ workshops needed for career advancement.	No Alumni complaints concerning lack of information on local job market.	No Alumni complaints about job contributing to unhappiness.

FIGURE 3 - STUDENT ULTIMATE EXPECTATIONS OF PROGRAM

D

5. Describe the criterion or criteria for each process which may be used to judge success of the process in producing a desirable outcome.

Figure 2 contains an example of an analysis of student immediate expectations of a program. Expectations of students could be obtained prior to their entering the program or immediately after admission to the program. For each expectation the process which they will experience is recorded. Of course, criteria, or a criterion, for each process are specified.

After the students leave the program a follow-up study, based upon the criteria/ion for each process, can be conducted. Data from the follow-up can be interpreted for levels of success or failure of each process based upon former student performance. Adjustments to any process, found less than desirable, could be made. Any changes in process must be recorded so a complete description of the educational process for the present students is available. The main reason for having criteria/ion for process and a complete description of process is to provide the basis for determining why the students after leaving the program are successful, unsuccessful, unhappy, etc. Another reason would be to determine why students drop out, transfer, etc. while in the program.

Referring to Figures 2 and 3 on the Student level (horizontal), the student expectations for a quality

technical education program are:

The reputation of the program is good and not misrepresented.

If qualified to enter the program, funding assistance is available and the exact costs are known.

Exact entrance and exit requirements are available.

There is an excellent chance to complete the program once a person has qualified for entry into the program.

Credit is awarded for proven prior work experience or education.

Social activities are available.

Instructors are regularly available for help.

Tutoring sessions are regularly available.

The program courses and services are scheduled to allow persons working full time and part time to finish in a reasonable time.

Credits can be transferred without loss to other institutions.

The program provides information about the lives of persons who are in this type of work, future job markets and wages.

Students are treated as adults with respective legal rights.

The program provides job flexibility in case technology advancement changes job requirements.

Jobs will be open upon program completion.

Salaries will be what were expected.

Persons who want to advance can get further education via the program.

Jobs will be close by, if reported by the program.

The information about the job was correct for deciding to go into this work which has contributed to job satisfaction and happiness.

Another example, illustrated in Figure 4, is employer ultimate expectations. The employer expectations for a quality program is one that produces a person who:

Is honest

Works at a reasonably productive level for the employer

Comes to work regularly and on time

Does not violate other employee rights

Cooperates with other employees

Can handle responsibility

Exhibits good workmanship

Performs cognitive and psychomotor tasks at an acceptable level

What is probably very apparent is that every person, association or business, has a definition of how to recognize a quality technical education program. Using this matrix may provide you the opportunity to identify the populations which have expectations of your particular

LEVELS OF RESPONSIBILITY				
EMPLOYER	Is the person honest?	Will the person respect the employer's rights?	Will the person come to work regularly and on time?	Can the person get along with others?
PROCESS	The instruction includes units on employee responsibility, court decisions, etc.	The instruction includes units on employer rights, court decisions, and employer problems.	Program completion requires regular attendance and punctuality.	Instructors are required to observe and record cooperation by the student in class. Conferences are held with students having problems.
CRITERIA	No Alunmi will be fired, fined, or imprisoned for dishonesty.	No conflicts between employer and employee concerning employer's rights.	Employer report acceptable work attendance and punctuality.	Employers report no personal conflicts.

FIGURE 4 - EMPLOYER ULTIMATE EXPECTATIONS OF PROGRAM

E

ULTIMATE EXPECTATIONS

Does the person have the ability to handle responsibility?	Does the person have pride in workmanship?	Does the person have technical skills I need in my business?
Students are given problem solving activities which they are responsible for completing with minimum supervision.	Affective student behavioral instruction is integrated into the instruction.	Instruction, including regular testing, is based on precise cognitive and psychomotor behavioral outcomes derived from task analysis.
Employers report Alumni are capable of handling responsiblity.	Employers report satisfactory level of pride in workmanship.	Employers seek our students first. Alumni are not fired or demoted due to lack of entry level technical skills.

FIGURE 4 (Continued)

F

program and to analyze their expectations. From these expectations you can specify process and criteria. The next step would be to design follow-up studies from the matrix from which you could assess, based on follow-up data, the results of the process on student outcomes.

Assessment

Concerning assessment, examine the research report Educational Auditing and Voluntary Institutional Accrediting (ED 102 919) by Fred Harcleroad and Frank Dicky. The philosophy and basic postulates of business and industry accountability are analyzed for applicability for an "educational evaluation audit" as a means to enhance quality. Of particular importance is their recognition that, "Respected authorities on the philosophy of auditing have commented that auditors [business/industry] are similar to other social scientists and must make judgments on problems of fact and problems of value" (p. 14). One implication to educators is that they must use their professional competencies to judge program quality based on follow-up data, cost per pupil per program, etc. No longer can data be collected and presented without professional judgment of program quality, which has occurred in the past. This may be evident to persons who recently received the American Vocational Education request (2/9/79) for information for a report on "Vocational Education Effectiveness."

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CLEARINGHOUSE FOR
JUNIOR COLLEGES

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